AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions, and listings, of claims in the captioned patent application:

Listing of Claims:

1. (Currently Amended) A method of transforming a motion in a volume screw machine, said machine having at least two sets of conjugated elements (80, 70; 60, 50), each of the sets further ~~set~~ comprising:

a first element (80, 60) having an inner screw surface (180, 160) centered around a first axis (passing through ~~centre~~ center O); and

a second element (70, 50) having an outer screw surface (270, 250) centered around a second axis (passing through centers Om_2, Om_1),

wherein the first element has a symmetry order n_f=3 and the second element has symmetry order n_m=2,

wherein an inner set (50, 60) of the conjugated elements is placed coaxially in at least one cavity of the second element of an outer set (80, 70) of conjugated elements,

wherein the first and second axes (passing through centers O; Om_1, Om_2) are parallel and distances E1 and E2, respectively, and are offset in opposite directions relative to the center O,

wherein at least one of said first and second elements of each set is rotatable about its axis, ~~wherein the screw surfaces are non-cylindrical and radially limit the conjugated elements,~~ said method comprising:

creating a rotary motion of at least one element in each ~~set~~ of the sets.

2. (Previously presented) The method of claim 1, wherein the rotary motion of said at least one element in each set is synchronized in such a manner as to provide for a dynamically balanced machine.

3. (Previously presented) The method of claim 1, wherein each set comprises an element centered about an axis which coincides with a principal axis of the machine, and

wherein the respective second element of each set is centered about an axis which is not coinciding with the principal axis, wherein the non-coinciding axes are rotated in such a manner about the principal axis as to maintain the distance relationship of the non-coinciding axes with regard to each other and with regard to the principal axis.

4. (Previously presented) The method of claim 1, wherein

said first axes of each set of conjugated elements coincide, whereas the second axes are non-coinciding, or that said second axes of each set of conjugated elements coincide whereas the first axes are non-coinciding,

and that the non-coinciding axes (passing through centers Om_1, Om_2) are rotated in such a manner about the coinciding axes (passing through centre O) as to maintain the distance relationship of the non-coinciding axes (passing through centers Om_1, Om_2) with regard to each other and with regard to the coinciding axes (passing through center O).

5. (Previously presented) The method of claim 2, wherein

a motion of the elements of different sets of conjugated elements about their respective axes is synchronized.

6. (Previously presented) The method of claim 1, wherein, of a first group of rotations comprising:

a) the rotation of the first element of one set of conjugated elements about the first axis,

b) the rotation of the second element of one set of conjugated elements about the second axis, and

c) a rotation of the first axis about the second axis or a rotation of the second axis about the first axis,

at least two rotations are mechanically synchronized each with a respective one of a second group of rotations comprising:

d) the rotation of the first element of another set of conjugated elements about the first axis, and

c) the rotation of the second element of another set of conjugated elements about the second axis.

7. (Original) The method of claim 6,

wherein first and second sets of conjugated elements each comprise a planetarily moving element, and wherein the rotations of the axes of the planetarily moving elements of the first and second sets are synchronized, and wherein the rotations of the planetarily moving elements about their respective axes are synchronized.

8. (Original) The method of claim 6,

wherein first and second sets of conjugated elements each comprise a differential motion, and wherein rotations of the axes of the first elements of the first and second sets are synchronized, and wherein rotations of the axes of the second elements of the first and second sets are synchronized.

9. (Original) The method of claim 6,

wherein a first set of conjugated elements comprises a planetary motion and a second set of conjugated elements comprises a differential motion, and wherein rotations of the axes of the first elements of the first and second sets are synchronized, and wherein rotations of the axes of the second elements of the first and second sets are synchronized.

10. (Original) The method of claim 6,

wherein a first set of conjugated elements comprises a planetary motion and a second set comprises a synchronization coupling link (Om_1-O, Om_2-O) for providing a differential motion, and wherein a rotation of the axis of an element of the first set of conjugated elements is synchronized with a rotation of the synchronizing coupling link of the second set of conjugated elements.

11. (Previously presented) The method of claim 1,

wherein curvilinear inner surfaces (180, 170, 160) of the first elements (80, 70,

60) are put into mechanical contact with curvilinear outer surfaces (270, 260, 250) of the second elements (70, 60, 50), thereby carrying out said motion transfer.

12. (Currently Amended) A volume screw machine of rotary type, comprising at least two sets of conjugated elements (80, 70; 60, 50), each set further comprising:

a first element (80, 60) having an inner screw surface (180, 160) and enclosed therein a second element (70, 50) having an outer screw surface (270, 250), ~~the screw surfaces being non-cylindrical and radially limiting the conjugated elements,~~ wherein the first element has a symmetry order n_f=3 and the second element has symmetry order n_m=2, and

said conjugated elements of said machine further comprising:

an outer set of conjugated elements (80, 70); and

at least one inner set of conjugated elements (60, 50),

wherein each inner set of conjugated elements (60, 50) is placed in a cavity of an element ~~(70)~~ of another set of conjugated elements ~~(80, 70)~~.

13. (Previously presented) The screw machine of claim 12,

wherein rotatable elements of the different sets of conjugated elements are mechanically coupled to each other such as to provide for a synchronized motion of said elements.

14. (Currently Amended) A method of transforming a motion in a volume screw machine, said machine having at least two sets of conjugated elements, each set comprising:

a first element having an inner screw surface centered around a first axis (passing through center O); and

a second element having an outer screw surface centered around a second axis (passing through centers Om_2, Om_1),

wherein the first element has a symmetry order n_f=3 and the second element has n_m=2,

wherein an inner set of the conjugated elements is placed coaxially in at least

one cavity of the second element of an outer set conjugated elements,

wherein the first and second axes) passing through centers O, Om_1 and Om_2) are parallel and distances E1 and E2, respectively, and are offset in opposite directions relative to the center O,

wherein at least one of said elements of each set is rotatable about its axis, ~~and wherein the screw surfaces are non-cylindrical and radially limit the conjugated elements,~~ said method comprising:

creating a rotary motion of at least one element in each set of conjugated elements, each set further comprising an element centered about an axis which coincides with a principal axis of the machine, the respective second element of each set being centered about an axis which is not coinciding with the principal axis, and the non-coinciding axis being rotated in such a manner about the principal axis as to maintain the distance relationship of the non-coinciding axes with regard to each other and with regard to the principal axis.